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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,867	05/08/2007	Pascal Del Gallo	Serie 6356	2236

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EXAMINER	
NGUYEN, KHANH TUAN	
ART UNIT	PAPER NUMBER
1796	
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10/20/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,867	DEL GALLO ET AL.	
	Examiner	Art Unit	
	KHANH T. NGUYEN	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30-49* is/are pending in the application.

4a) Of the above claim(s) *36-39 and 47-49* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30-35 and 40-46* is/are rejected.

7)☒ Claim(s) *30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/09/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species I (Compound C1) and further Subspecies 1b (Perovskite Oxide of formula (II)) in the reply filed on 08/13/2009 is acknowledged.

Response to Amendment

2. This application is a 371 of PCT/FR04/02851 (filed on 11/05/2004). The preliminary amendment filed on 08/31/2009 is entered and acknowledged by the Examiner. Claims 30-49 are pending in the instant application. Claims 1-29 have been canceled. Non-elected Claims 36-39 and 47-49 have been withdrawn from further consideration. Claims 30-35 and 40-46 are currently under examination.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

The Applicant benefits the priority to FRANCE 0350802 date filed on 11/06/2003.

Information Disclosure Statement

4. The information disclosure statement (IDS) filed on 05/09/2007 has been considered. An initialed copy accompanies this Office Action.

Drawings

5. The drawing(s) filed on 04/28/2006 are approved by the examiner.

Specification

6. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
    (1) Field of the Invention.
    (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 30, 32-35, and 40-46 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 22-35 and 38-39 of copending Application No. 11/049,586 (as filed on 02/05/2009). Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications contain a material/composite comprising of at least 75 vol. % of a doped ceramic oxide (C_1) and up to 25 vol.% of a compound (C_2) that is different from C_1 and optionally up to 2.5 vol. % of the product (C_3) of C_1 and C_2.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

9. Claim 30 is objected to because of the following informalities: The phase "from 0.01 to 25 vol%" at line 8 of the instant is suggest to be amended to read -- from 0.01 vol% to 25 vol% --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 31-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 31 recites the limitation "the grains of compound (C_2)" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. Applicant is suggested to amend the limitation to recite –a grain of compound (C_2)--.

Regarding claim 31, the phrase "preferably less than 1 μm" renders the claim indefinite because it is unclear whether the phrase following the range of 0.1 μm to 5 μm is part of the claimed invention.

Claims 32-35 recite the limitation "the volume fraction" in lines 1-2, respectively. There is insufficient antecedent basis for this limitation in the claim. Applicant is suggested to amend the limitation to recite –the volume percent--.

Claim Rejections - 35 USC § 102/103

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim Interpretation: Claim 1 is drawn to a composite (M) comprising of at least 75 vol% of compound C_1 chosen from a doped ceramic oxide having cubic phase, fluorite phase, aurivillius-type perovskite phase, brown-millerite phase or pyrochlore phase and 0.01 to 25 vol% of compound C_2 wherein compound C1 and compound C_2 chemically react to yield 0 to 2.5 vol% of compound C_3. Since compound C_3 is a product of produced by reacting compound C_1 and compound C_2, the instant claims is considered as a product-by process claim. Furthermore, compound C_3 include 0 vol%, i.e. z is equal to zero, as a lower limit, thus the prior art need not teach or suggest compound C_3.

13. Claims 30-31 and 32-35 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over WO 00/59613 (hereinafter refer to as Mackay).

14. The instant reference is provided in the 1449 submitted on 05/09/2007.

Mackay teaches a mixed conducting metal oxide material useful for manufacturing of catalytic membranes for gas-phase oxygen separation process. The metal oxide material comprises of greater than about 90 wt. % of a single-phase mixed metal oxide having a brown-millerite structure (see Abstract; Page 1 line 14 to Page 2 lines 11) and greater than about 4 wt. % other phases such as metal oxides for preparing off-stoichiometric mixture or due to inaccurate amount of starting material (Page 6, line 28 to Page 7 line 6). The mixed metal oxide having a brown-millerite structure as suggested by Mackay is readable on the claimed compound C_1, i.e. a

doped ceramic oxide having a brown-millerite phase. The additional metal oxide as suggested by Mackay is readable on the claimed compound C_2, i.e. metals that is expose to air (oxygen) are easily oxidize to form metal oxides. The amount of mixed metal oxide (greater than about 90 wt. %) and additional metal oxide (greater than about 4 wt. %) are considered to be within the amount as recited in Claims 30 and 34-35. It should be noted that Mackay need not suggest compound C_3 since the amount of said compound C_3 may include zero volume percent, i.e. does not exceed 0.5 vol% as recited in Claim 32 and a volume amount tend toward 0 as recited in Claim 33. Furthermore, the instant claims are product-by-process claims and are not limited to the manipulations of the recited steps, only the structure limited by the steps. Therefore, the patentability of the product does not depend on its method of production and the claimed steps were not given patentable weight.

The reference specifically or inherently meets each of the claimed limitations in their broadest interpretations. The reference is anticipatory.

In the alternative that the above disclosure is insufficient to anticipate the above listed claims, it would have nonetheless been obvious to the skilled artisan to produce the claimed composite, any minor modification necessary to meet the claimed limitations, such converting weight percent to volume percent would have been within the purview of the skilled artisan.

Regarding Claim 31, the Examiner takes the position that the metal of Mackay that is oxidized by air, i.e. metal oxide, is expected to have a grain diameter within the

broad claimed range of 0.1 to 5 microns since the metal as suggest by Mackay is known to have a particle size within the claimed range.

15. Claims 30-35, and 40-42 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Pat. 5,624,542 (hereinafter refer to as Shen).

With respect to Claims 30 and 32-35, Shen teaches a ceramic/metallic composite membrane having enhanced mechanical properties by incorporating oxidation-resistant metal phase to the ceramic phase (see Abstract). The membrane is useful as an ionic-electronic conductor for oxygen exchange reactions (Col. 7, lines 24-27) or coating for reduction of oxygen (Col. 7, lines 43-63). Shen teaches the composite may broadly comprise of about 50 vol% to about 99 vol% ceramic phase including doped perovskite ceramic material and about 1 vol% to about 50 vol% of a metal phase including metal oxide and metal alloy (Col. 4, lines 53-60 and Col. 5, lines 25-45). The ceramic/metallic composite as suggested by Shen is readable on the composite (M) as recited in Claim 30 wherein perovskite ceramic material is compound C_1 and the metal phase is compound C_2. The amount of doped perovskite ceramic material and metal phase overlaps the amount of compound C_1 and compound C_2 as recited in Claims 30 and 34-35. It should be noted that Shen need not suggest compound C_3 since the amount of said compound C_3 may include 0 vol%, i.e. does not exceed 0.5 vol% as recited in Claim 32 and a volume amount tend toward 0 as recited in Claim 33. Furthermore, the instant claims are product-by-process claims and are not limited to the manipulations of

the recited steps, only the structure limited by the steps. Therefore, the patentability of the product does not depend on its method of production and the claimed steps were not given patentable weight.

The reference specifically or inherently meets each of the claimed limitations in their broadest interpretations. The reference is anticipatory.

In the alternative that the above disclosure is insufficient to anticipate the above listed claims, it would have nonetheless been obvious to the skilled artisan to produce the claimed composite, any minor modification necessary to meet the claimed limitations, such chemically reacting compound C_1 and compound C_2 to product compound C_3 would have been within the purview of the skilled artisan.

Regarding Claim 31, the Examiner takes the position that the metal oxide and metal alloy of Shen is expected to have a grain diameter within the broad claimed range of 0.1 to 5 microns since the metal and metal oxide as suggest by Shen is known to have a particle size within the claimed range.

Regarding Claims 40-42, Shen teaches the doped perovskite ceramic material (compound C_1) having a formula that may be selected from

$$La_{1-z}Sr_zCo_{1-w}Fe_wO_{3-\delta} \quad \text{or} \quad La_{1-z}Sr_zMn_{1-w}Co_wO_{3-\delta}$$

as recited in Claim 40 (Col. 5, lines 27-28). Shen suggest the z is about 0.01 to about 0.8, w is about 0.01 to about 0.8, and δ is a number of 0 to a positive or negative number of about 0.3 to satisfy valence requirements (Col. 5, lines 30-35). The doped perovskite ceramic material of Shen is readable on the instant claim when Ma is a lanthanide such as lanthanum (La) atom as recited in Claim 41; Ma' is an alkaline-earth

metal such as Sr as recited in Claim 41; Ma" is not require since u may be equal to zero; Mb is a transition metal such as Co or Mn; Mb' is a transition metal such as Fe or Co; Mb" is not required since v may be equal to zero; x is about 0.01 to about 0.8; y is about 0.01 to about 0.8; and w (δ) may be zero, i.e. neutral.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claims 43-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. 5,624,542 (Shen) as applied to the above claims, and further in view of either U.S. Pat. 5,534,471 (hereinafter refer to as Carolan) or U.S. Pat. 6,153,163 (hereinafter refer to as Prasad).

Shen is relied upon as set forth above. With respect to instant claim 43, Shen does not disclose the doped ceramic material, i.e. equivalence to formula (II) of the instant claim, in which Mb represent an iron (Fe) atom.

However, Carolan discloses a membrane having a composite structure comprising of a multicomponent metallic oxide and metal oxides (Col. 5, lines 15-27 and lines 40-50). Carolan discloses the metal oxide selected from the same metal as suggested by Shen (Col. 6, lines 18-20). In one embodiment, Carolan discloses the

multicomponent metallic oxide having the same formula as the doped perovskite ceramic material of Shen, i.e. $La_xA_{1-x}Co_yFe_{1-y}O_{3-z}$ wherein A may be Sr (See Col. 6, lines 3-6). Carolan further discloses the multicomponent metallic oxide is represented by the formula

$$A_xA'_{x'}A''_{x''}B_yB'_{y'}B''_{y''}O_{3-z}$$

where in A, A', A" are selected from the group comprising of Group 1, 2, 3 and the F block lanthanides; B, B', B" are selected from D block transition metals; x is greater than 0 and up to 1; x' and x" is 0 to 1; y is greater than 0 and up to 1; y' and y" is 0 to 1; and z is a number which renders the compound charge neutral (Col. 5, lines 51-62). Thus, the D block transition metal such as iron (Fe) and Co atom of Shen can occupy B, B', or B" site of Carolan interchangeably.

Likewise, Prasad teaches a ceramic membrane (Title) useful as ion transport (Abstract) that may comprise of doped ceramic material such as

$$(La_{1-x}Sr_x)(Co_{1-y}Fe_y)O_{3-\delta} \quad \text{or} \quad A_xA'_{x'}A''_{x''}B_yB'_{y'}B''_{y''}O_{3-z}$$

as suggest by both Shen and Carolan for the same utility (See Table 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the doped perovskite ceramic material of Shen by interchanging the Fe and Co atoms on the $La_{1-z}Sr_zCo_{1-w}Fe_wO_{3-\delta}$ compound to yield multicomponent metallic oxide such as $La_xSr_{x'}Fe_yCo_{y'}O_{3-z}$ as suggested by either Carolan or Prasad to yield a predictable result.

Regarding Claims 44-46, the multicomponent metallic oxide of Carolan that is represented by the formula $A_xA'_{x'}A"_{x"}B_yB'_{y'}B"_{y"}O_{3-z}$ where in A, A', A" are selected from the group comprising of Group 1, 2, 3 and the F block lanthanides; B, B', B" are selected from D block transition metals; x is greater than 0 and up to 1; x' and x" is 0 to 1; y is greater than 0 and up to 1; y' and y" is 0 to 1; and z is a number which renders the compound charge neutral is readable on the claim 33 (See Col. 5, lines 51-62). When B, B', B" are selected from D block transition metals such as Fe and Ti, the multicomponent metallic oxide is readable on the formulae of Claims 45 (i.e. formulae c and d) and 46 (i.e. formula b).

In view of the foregoing, the above claims have failed to patentably distinguish over the applied art.

Other Prior Art Cited

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

JP 2000-251533 to Akikusa et al. teaches an oxide-ion mixed conductor having a composition represented by a formula $(La_{1-x}Sr_xFe_{1-y}M_yO_3$ wherein M is one or more Mg, Cr, Al, and Ga; y is 0.02-0.5 when M=Ga (see Abstract).

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH T. NGUYEN whose telephone number is (571)

272-8082. The examiner can normally be reached on Monday-Friday 7:00-4:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Kopec/
Primary Examiner, Art Unit 1796

/KTN
Examiner
10/19/2009